

housing of the implantable pulse generator.

69. (New) A method comprising:
disposing a cathodic first electrode within a ventricle at an apex of the ventricle;
disposing an anodic second electrode within the ventricle at a location that is more proximal than the first electrode; and
delivering a pacing pulse between the cathodic first electrode and the anodic second electrode.

70. (New) The method of claim 69, wherein the disposing the anodic second electrode includes disposing a defibrillation electrode.

REMARKS

Applicant has reviewed the Office Action dated October 16, 2002, and the references cited therewith.

Claims 41-54 are amended. Claims 1-40 are cancelled without prejudice or disclaimer. Claims 57-70 are added. As a result, claims 41-70 are now pending in this application.

Affirmation of Election

Applicant confirms the provisional election to Group II, claims 41 - 56, without traverse, by Suneel Arora on September 26, 2002 in response to the telephonic Restriction Requirement. Accordingly, claims 1 - 40 are canceled without prejudice or disclaimer. Applicant reserves the right to reintroduce the canceled claims in subsequent divisional applications.

In the Drawings

The drawings were objected to under 37 C.F.R. § 1.84(p)(4). The Office Action asserts that, in Figure 2, reference characters "207" and "235" designate the same part. Applicant traverses this assertion, but submits a clarifying drawing change. The patent application uses reference character 207 to refer to a lead connector at a proximal end 205 on a first lead 204.

(See Application at page 7, lines 23-24). The patent application uses reference character 235 to refer to a lead connector at a proximal end 232 of a second lead 226. (See Application at page 8, lines 27-29). Applicant believes that this drawing change reflects (and is fully supported by) the specification of the present patent application. Accordingly, Applicant requests withdrawal of this objection.

The Office Action also asserts that, in Figure 2, reference characters "236" and "238" are not clearly marked. Accordingly, Applicant submits a clarifying drawing change. The patent application uses reference character 236 to refer to a first electrode, and uses reference character 238 to refer to a second electrode that may be more distal than the first electrode 236, such as at the distal end 234 of the lead 226. (See Application at page 9, lines 3-10). Applicant believes that this drawing change reflects (and is fully supported by) the specification of the present patent application. Accordingly, Applicant requests withdrawal of this objection.

The Office Action also asserts that, in Figure 3, the reference elements 300', 302', 304', and 306' are not mentioned in the description. Accordingly, Applicant submits a clarifying drawing change that removes the "prime" designation on these reference numerals such that they are consistent with (and fully supported by) the specification of the present patent application. Accordingly, Applicant requests withdrawal of this objection.

The Office Action also asserts that, in Figure 10, it appears that CHESS should be CROSS. Accordingly, Applicant submits a clarifying drawing change such that Figure 10 is consistent with (and fully supported by) the specification of the present patent application. Accordingly, Applicant requests withdrawal of this objection.

In the Specification

The Office Action included an objection to the Abstract on the grounds that it should be restricted to the elected invention. Accordingly, Applicant submits an amended Abstract that is consistent with the election.

The Office Action also included an objection to a typographical error. Accordingly, Applicant is submitting amendments to the specification to correct various typographical errors.

Applicant respectfully requests withdrawal of these objections.

Objection to the Claims

Claims 41, 43-44, 47-48, 50-51, and 54 were objected to on the grounds that the phrase “pulses vector” is inconsistent with the disclosure. Accordingly, Applicant has amended these claims to refer to at least one pacing pulse vector, which Applicant submits is consistent with the disclosure.

Claims 45, 46, 52, and 52 were objected to on the grounds that the term “common” is confusing. Without agreeing with the assertion that “common implies same polarity,” Applicant has amended these claims to refer to various configurations in which more than one electrode are connected in common. Applicant respectfully submits that the present claims are sufficiently definite and fully supported by the disclosure.

Applicant therefore respectfully requests withdrawal of these objections.

Other Claim Amendments

Applicant has amended claims 41-44, 46-50, and 52-54 to include enumeration within these claims to otherwise improve readability. Applicant respectfully submits that such amendments for readability are non-narrowing.

Rejections Under 35 U.S.C. § 102

Claims 41, 42, 44, 48, 49 and 51 were rejected under 35 U.S.C. § 102(e) as allegedly anticipated by Alt et al. (U.S. Patent No. 6,370,427). Applicant traverses.

Applicant can find no disclosure in Alt et al. of using at least one pacing pulse vector between at least one left ventricular electrode and a right atrial electrode, as recited or incorporated in claims 41, 42, and 44. The rejection suggests that because Alt et al. discloses simultaneous pacing of right and left ventricles, the method acts of claim 41 are somehow inherent in Alt et al. Applicant disagrees. In fact, the simultaneous pacing of Alt et al. actually teaches away from using at least one pacing pulse vector between at least one left ventricular electrode and a right atrial electrode, as recited in claim 41. More particularly, the cited portion of Alt et al. recites:

A variation of the invention is implemented in an implantable pacemaker that includes a pulse generator, a right ventricular pacing lead with *an electrode*

coupled to the pulse generator *for positioning in the right ventricle to deliver stimulating pacing pulses from the generator thereto*, a left ventricular pacing lead with *an electrode coupled to the pulse generator for positioning in the left ventricle to deliver stimulating pacing pulses from the generator thereto*, and means for applying selected ones of the stimulating pacing pulses to the right and left ventricular pacing leads for stimulating the ventricles simultaneously. The pacemaker also includes an atrial pacing lead with *an electrode coupled to the pulse generator and positioned in the right atrium to deliver stimulating pacing pulses thereto*, and means for applying selected ones of the stimulating pacing pulses to the atrial pacing lead, timed for stimulating the atria.

(Alt et al. at column 5, lines 26-42.) Alt et al. apparently discloses using an electrode in a heart chamber to deliver a pulse within that same heart chamber. By contrast, claims 41, 42, and 44 recite or incorporate using a pacing pulse vector between electrodes in different heart chambers, such as between the left ventricle and the right atrium. Applicant can find no such disclosure, teaching, or suggestion in Alt et al.

Similarly, Applicant can find no disclosure in Alt et al. of using at least one pacing pulse vector between at least one left ventricular electrode and a right ventricular electrode, as recited or incorporated in claims 48, 49, and 51. Instead, as discussed above, Alt et al. apparently discloses using an electrode in a heart chamber to deliver a pulse within that same heart chamber. (*See id.*) By contrast, claims 48, 49, and 51 recite or incorporate using a pacing pulse vector between electrodes in different heart chambers, such as between the left and right ventricles. Applicant can find no such disclosure, teaching, or suggestion in Alt et al.

Applicant therefore requests withdrawal of this rejection of claims 41, 42, 44, 48, 49 and 51. As an additional note, Applicant notes that the present patent application has a filing date of February 8, 2001, and that Alt et al. did not issue until April 9, 2002. Consequently, Alt et al. is available as prior art (if at all) only under 35 U.S.C. 102(e). Therefore, Applicant does not admit that the cited Alt et al. reference is prior art and reserves the right to "swear behind" Alt et al. as provided for under 37 C.F.R. 1.131.

Rejections Under 35 U.S.C. § 103

1. Claims 43 and 50 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Alt et al. in view of Stoop et al. (U.S. Patent No. 5,999,853). The Examiner's burden of

establishing a *prima facie* case of obviousness requires, among other things, that each and every one of the recited claim limitations are taught or suggested in the cited prior art reference(s) independent of the teaching in the applicant's disclosure. *See In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. However, Applicant can find no teaching or suggestion in Alt et al. and/or Stoop et al. of using a pacing vector between at least one left ventricular electrode and a right atrial electrode, as incorporated in claim 43 by its dependence on claim 41. Similarly, Applicant can find no teaching or suggestion in Alt et al. and/or Stoop et al. of using a pacing vector between at least one left ventricular electrode and a right ventricular electrode, as incorporated in claim 50 by its dependence on claim 48. Moreover, Applicant respectfully submits that the rejection's assertion that Stoop et al. teaches unipolar pacing between a ventricular electrode and a pacemaker can or housing actually teaches away from such absent aspects of these claims. Because no *prima facie* case of obviousness exists with respect to claims 43 and 50, Applicant respectfully requests withdrawal of this rejection.

2. Claims 45, 46, 52 and 53 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Alt et al. in view of Smits (U.S. Patent No. 4,641,656). The Examiner's burden of establishing a *prima facie* case of obviousness requires, among other things, that each and every one of the recited claim limitations are taught or suggested in the cited prior art reference(s) independent of the teaching in the applicant's disclosure. *See In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. However, Applicant can find no teaching or suggestion in Alt et al. and/or Smits of using a pacing vector between at least one left ventricular electrode and a right atrial electrode, as incorporated in claims 45 and 46 by their dependence on claim 41. Similarly, Applicant can find no teaching or suggestion in Alt et al. and/or Smits of using a pacing vector between at least one left ventricular electrode and a right ventricular electrode, as incorporated in claims 52 and 53 by their dependence on claim 48. The rejection asserts:

Smits teaches two ventricular electrodes 240 and 242 mounted on the left ventricle and a third electrode 244 mounted on the right ventricle wherein electrodes 240 and 242 have like polarity and electrode 244 has an opposite polarity for the delivery of a bipolar pulse regime (col. 9, lines 50-66).

(Office Action at 5.) However, the cited portion of Smits (and, indeed, the entirety of the Smits

reference) is apparently directed only toward delivering defibrillating or cardioverting pulses rather than the pacing pulses referred to in the present claims. Because one of ordinary skill in the art would understand that a pacing pulse is configured with a relatively lower energy so as to trigger a resulting heart contraction, in contrast to a defibrillation or cardioverting pulse, which is oppositely configured with a comparatively higher energy so as to interrupt an abnormal rhythm of heart contractions, Applicant respectfully submits that Smits actually teaches away from the pacing pulses referred to in the present claims. Because of the clinically opposite nature of defibrillation/cardioversion from pacing, Applicant respectfully submits that the rejection improperly combines the Alt et al. and Smits references.

Because, among other things, Smits does not teach or suggest using pacing pulses, Applicant can find no teaching or suggestion in Alt et al. and/or Smits of delivering the pacing pulse from the commonly connected first and second left ventricular electrodes to the first right ventricular electrode, as presently recited in claim 45.

For similar reasons, Applicant can find no teaching or suggestion in Alt et al. and/or Smits of delivering the pacing pulse between (1) the commonly connected first left ventricular electrode and the second left ventricular electrode and (2) the commonly connected first right ventricular electrode and a housing of an implantable pulse generator, as presently recited in claim 46.

Similarly, Applicant can find no teaching or suggestion in Alt et al. and/or Smits of delivering the pacing pulse between (1) the commonly connected first and second left ventricular electrodes and (2) the supraventricular electrode, as presently recited in claim 52.

Likewise, Applicant can find no teaching or suggestion in Alt et al. and/or Smits of delivering the pacing pulse between (1) the commonly connected first left ventricular electrode and the second left ventricular electrode and (2) the commonly connected supraventricular electrode and a housing of an implantable pulse generator, as presently recited in claim 53.

Therefore, because no prima facie case of obviousness presently exists with respect to claims 45, 46, 52 and 53, and because the improper combination of Alt et al. and Smits actually teaches away from these claims, Applicant respectfully requests withdrawal of this rejection.

3. Claims 47 and 54 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over

Alt et al. in view of Speicher et al (U.S. Patent No. 4,603,705). The Examiner's burden of establishing a *prima facie* case of obviousness requires, among other things, that each and every one of the recited claim limitations are taught or suggested in the cited prior art reference(s) independent of the teaching in the applicant's disclosure. *See In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. However, Applicant can find no teaching or suggestion in Alt et al. and/or Speicher et al. of using a pacing vector between at least one left ventricular electrode and a right atrial electrode, as incorporated in claim 47 by its dependence on claim 41. Nor can Applicant find any teaching or suggestion in Alt et al. and/or Speicher et al. of using a pacing vector between at least one of first, second, and third left ventricular electrodes and a right atrial electrode, as presently recited in claim 47. Similarly, Applicant can find no teaching or suggestion in Alt et al. and/or Speicher et al. of using a pacing vector between at least one left ventricular electrode and a right ventricular electrode, as incorporated in claim 54 by its dependence on claim 48. Nor can Applicant find any teaching or suggestion in Alt et al. and/or Speicher et al. of using a pacing vector between at least one of first, second, and third left ventricular electrodes and a right ventricular electrode, as presently recited in claim 54. In fact, as recognized in the rejection, Speicher et al. is directed toward a unitary multielectrode catheter. (See Office Action at 6.) Because Applicant can find no teaching or suggestion in Speicher et al. of how such a unitary multielectrode catheter would provide an electrode associated with each of the right and left sides of a heart, Applicant respectfully submits that the unitary catheter of Speicher et al. actually teaches away from the present claims. Therefore, because no *prima facie* case of obviousness presently exists with respect to claims 47 and 54, and because Speicher et al. actually teaches away from the present claims, Applicant respectfully requests withdrawal of this rejection.

4. Claims 55 and 56 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Alt et al. in view of Thong et al. (U.S. Patent No. 6,341,234). The Examiner's burden of establishing a *prima facie* case of obviousness requires, among other things, that each and every one of the recited claim limitations are taught or suggested in the cited prior art reference(s) independent of the teaching in the applicant's disclosure. *See In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. However, Applicant can find no teaching or

suggestion in Alt et al. and/or Thong et al. of delivering a pacing pulse from a cathodic first ventricular defibrillation electrode to an anodic first ventricular pacing/sensing electrode, as recited or incorporated in claims 55 and 56. Indeed, Applicant can find no teaching or suggestion anywhere in these references of using a ventricular defibrillation electrode as a cathode for a pacing pulse. Instead, the cited portion of Thong et al. apparently discloses only that a bipolar lead includes both anodic and cathodic electrodes. (*See* Thong et al. at column 5, lines 1-5). Because no prima facie case of obviousness exists with respect to these claims, Applicant respectfully requests withdrawal of this rejection.

As an additional note, Applicant notes that the present patent application has a filing date of February 8, 2001, and that Thong et al. did not issue until January 22, 2002. Consequently, Thong et al. is available as prior art (if at all) only under 35 U.S.C. 102(e)/103. Therefore, Applicant does not admit that the cited Thong et al. reference is prior art and reserves the right to "swear behind" Thong et al. as provided for under 37 C.F.R. 1.131.

New Claims

Applicant has added new claims 57-70 to more particularly point out and distinctly claim aspects of the present patent application. Applicant respectfully submits that these new claims are fully supported by the patent application as originally filed, and are allowable over the art of record. Accordingly, Applicant respectfully requests allowance of new claims 57-70.

CONCLUSION

Claims 1-40 are canceled hereby. Claims 41-54 are amended herein. Claims 57-70 are added hereby. Claims 41-70 are now pending.

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612-373-6951) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

JEFFREY E. STAHMANN ET AL.

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Date Jan. 16, 2003

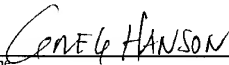
By


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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 16th day of January, 2003.

Name



Signature





TITLE: PACING AND SENSING VECTORS
INVENTORS NAME: Jeffrey E. Stahmann et al.
SERIAL NO.: 09/779,754

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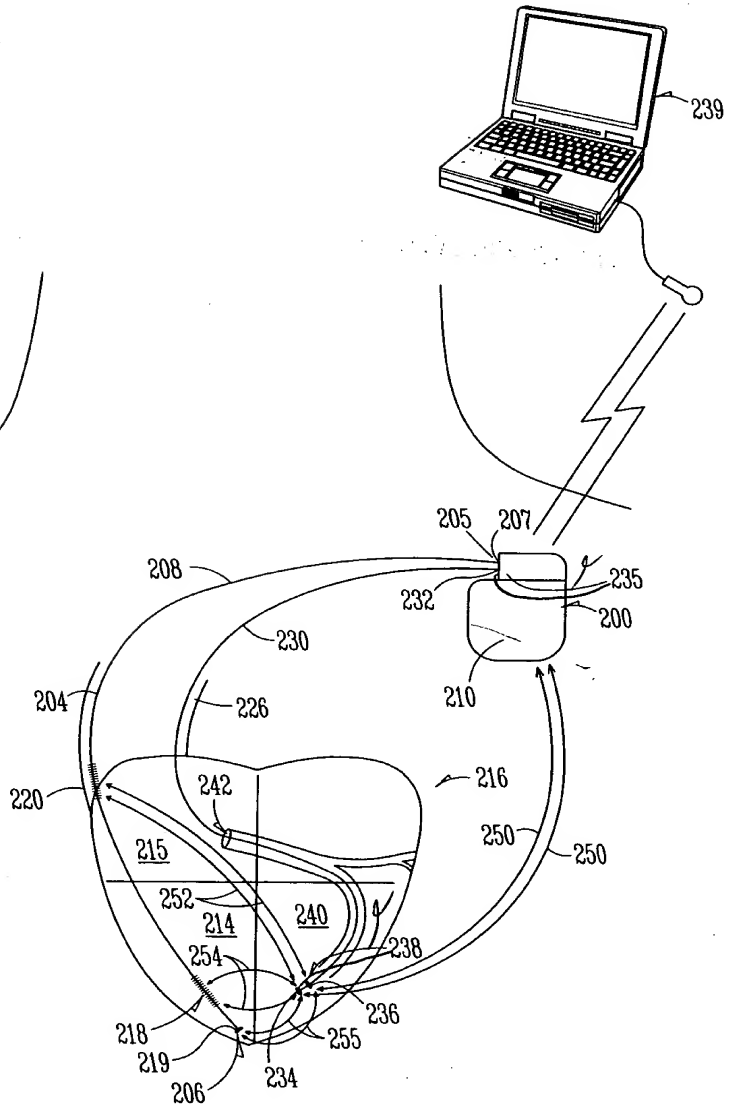


Fig. 2

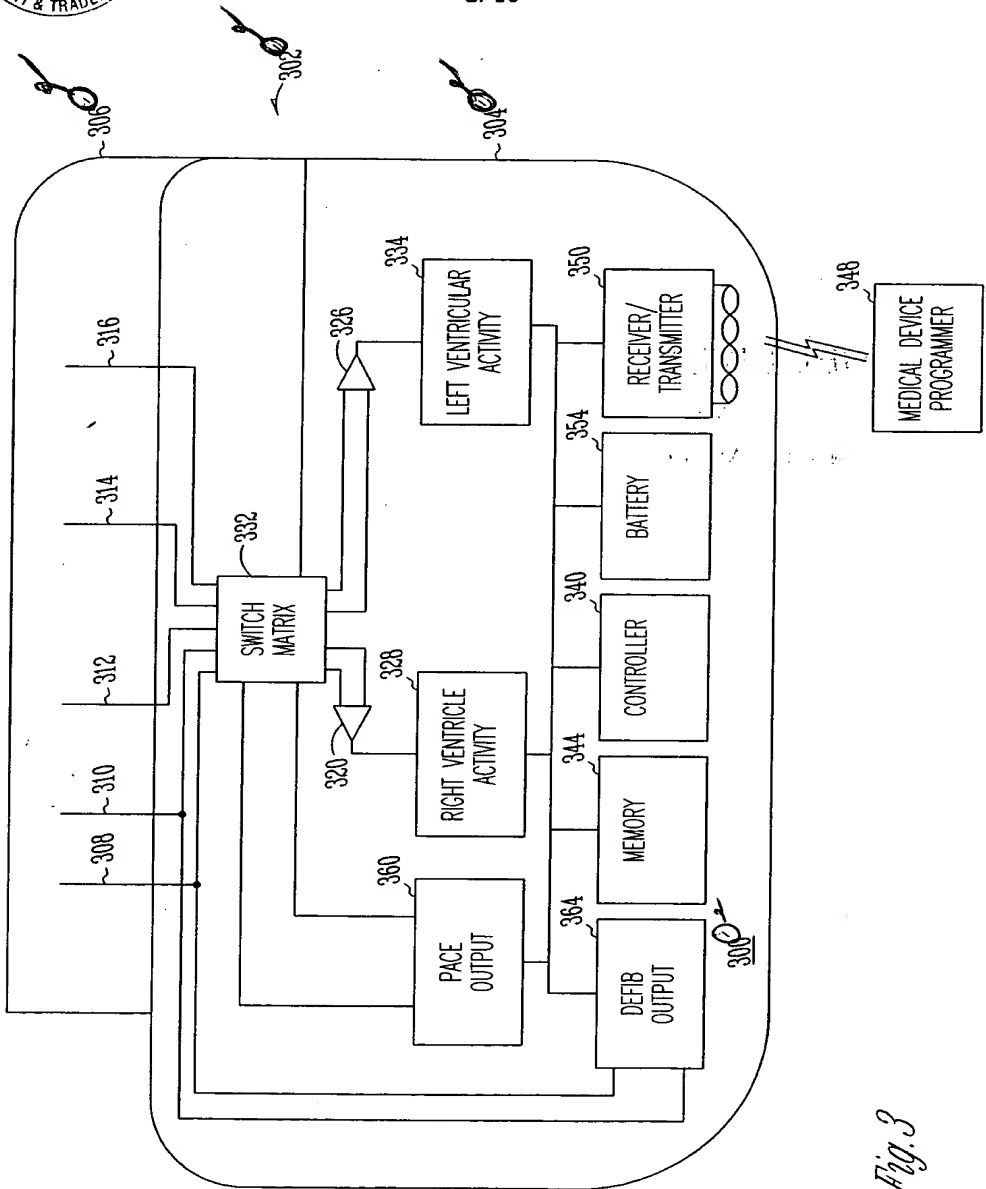


Fig. 3

